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13. ABSTRACT (Maximum 200 words) Studies utilizing human brain tissue examined the colocalization of neurotransmitters using immunocytochemical and in vitro hybridization techniques. Results have shown the coexistence of somatostatin and neuropeptide Y in the hippocampus, and galanin and acetylcholine in the human forebrain. <i>Neurotransmitters</i>			
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Final Scientific Report: Period May 1, 1988 - April 30, 1989

The research program that we have carried out during this 12 month period follows closely the plan and sequence of experiments laid out in the original grant application. We have streamlined our protocols for the collection of human brain slices from 1) patients at neurosurgical procedures necessitating the removal of brain material as part of the operation in areas perifocal to the region of trauma or injury and collected in the operating theater with delays of 5-10 minutes and 2) patients without previous history of neurological disease at postmortem within 3 hours of death. All material is subsequently verified to be non-pathological prior to experimental use. These materials are unique and we have tried to make the best use of them in our experimental protocols. In the 12 month period of this scientific report we collected 46 usable surgical biopsies from a total of 50 operations - 8 specimens were not usable. A total of 47 good postmortem brains was also collected. This represents a considerable collecting effort and sufficient material for the experimental program, as we had planned.

The main directions of the research program have been:

I) Immunocytochemical studies with antibodies against neurotransmitters or neuroactive peptides for localizing the peptides somatostatin, neuropeptide Y, and galanin; acetylcholine (using anti-choline acetyltransferase), and tyrosine hydroxylase (for the catecholamines); and for establishing the case for multiple coexistence of neuroactive substances in the human neurons. The results of these studies

have been published in the series of papers under List of Publications 1988-1989.

II) In vitro hybridization studies using the human gene for neuropeptide Y in order to establish the necessary methods applicable to human brain material to demonstrate that single neurons contain the gene and are capable of transcription of the message for the synthesis of neuropeptide Y, (see Publication List) and that both the transcription process and the storage of the neuropeptide are present in the same individual neurons of the human brain. These studies are unique in that they have applied techniques in the thrust area of molecular neurobiology for the first time to human neurons.

III) In addition, an edited book entitled "The Hippocampus": New Vistas (558 pages) has been published in which I am first editor which summarizes many of our studies reported here and supported by ASFOR.

The laboratory has run well, the projects have produced significant results for neurotransmitter work with integrative approaches of neurobiology and molecular biology for studying a unique brain system in man. The ASFOR support has been crucial for our continuation and our successes. We thank you for your support.

Victoria Chan-Palay, MD, PhD

Victoria Chan-Palay
Principal Investigator

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PUBLICATIONS 1988 AND 1989

Book:

Chan-Palay V. and Köhler C. (Eds.).

The Hippocampus: New Vistas, 558 pages

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